Sawyer Beach, Rye

BEACH WATER QUALITY REPORT
SUMMER 2004

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Healthy Swimming Through Clean Water

NHDES

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

BACKGROUND

The New Hampshire Department of Environmental Services (NHDES) has operated its Public Beach Inspection Program, or Beach Program, for over twenty years. Coastal beach monitoring began in 1989 and has continued through the present. NHDES recognizes the threat to public health at public beaches and continues to monitor public beaches throughout the state for the presence of pathogenic organisms. Coastal beaches are monitored for the presence of the fecal bacteria Enterococci. These fecal bacteria are present in the intestines of warm-blooded animals including humans. Fecal bacteria, when present in high concentrations and ingested, can commonly cause gastrointestinal illnesses such as nausea, vomiting and diarrhea. They are also known as indicator organisms, meaning their presence in water may indicate the presence of other potentially pathogenic organisms.

In October of 2000, the United States Environmental Protection Agency (EPA) signed into law the Beaches Environmental Assessment and Coastal Health (BEACH) Act. The BEACH Act is an amendment to the Clean Water Act that authorizes the EPA to award grants to eligible states. The purpose of the BEACH Act is to reduce the risk of disease to users of the nation's recreational waters. BEACH Act grants provide support for development and implementation of monitoring and notification programs that help protect the public from exposure to pathogenic microorganisms in coastal recreation waters.

NHDES received grant funding in 2002 to develop and implement a beach monitoring and notification program consistent with EPA's performance criteria requirements published in the *National Beach Guidance and Required Performance Criteria for Grants* document (www.epa.gov/waterscience/beaches/grants). NHDES has successfully met all requirements and continues to expand the monitoring and notification program. In 2002, only 9 coastal beaches were monitored, in 2003 fifteen coastal beaches and in 2004 sixteen coastal beach were monitored on a routine basis.

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Beach Description

Sawyer Beach is a soft sand/rocky beach. Its total length is 1,261 feet. The beach is frequently used by residents and vacationers for various recreational activities. There are three access paths to the beach area from roadside parking on Route 1A. Parking is limited and is by permit only however Sawyer Beach is a short walk from Jenness Beach. Lifeguards are present throughout the summer but sanitary facilities are unavailable.

A large number of waterfowl are frequently observed at the beach along the outflow of Eel Pond. The most commonly seen are gulls and terns. Dogs or evidence of dogs have been observed on the beach. There are restrictions for dogs during beach hours, however they are permitted before and after normal beach hours.

Below is a brief description of the sampling stations at Sawyer Beach, Rye. The stations are pictured in Figure 1.

- The right sample station is located straight in front of the southern ramp entrance to the beach.
- The center sample station is located straight in front of the main beach entrance and lifeguard tower.
- The left sample station is located straight in front of the northern ramp entrance to the beach, not far from Eel Pond Outlet
- The Eel Pond Outlet station is where the culvert discharges to the beach area.

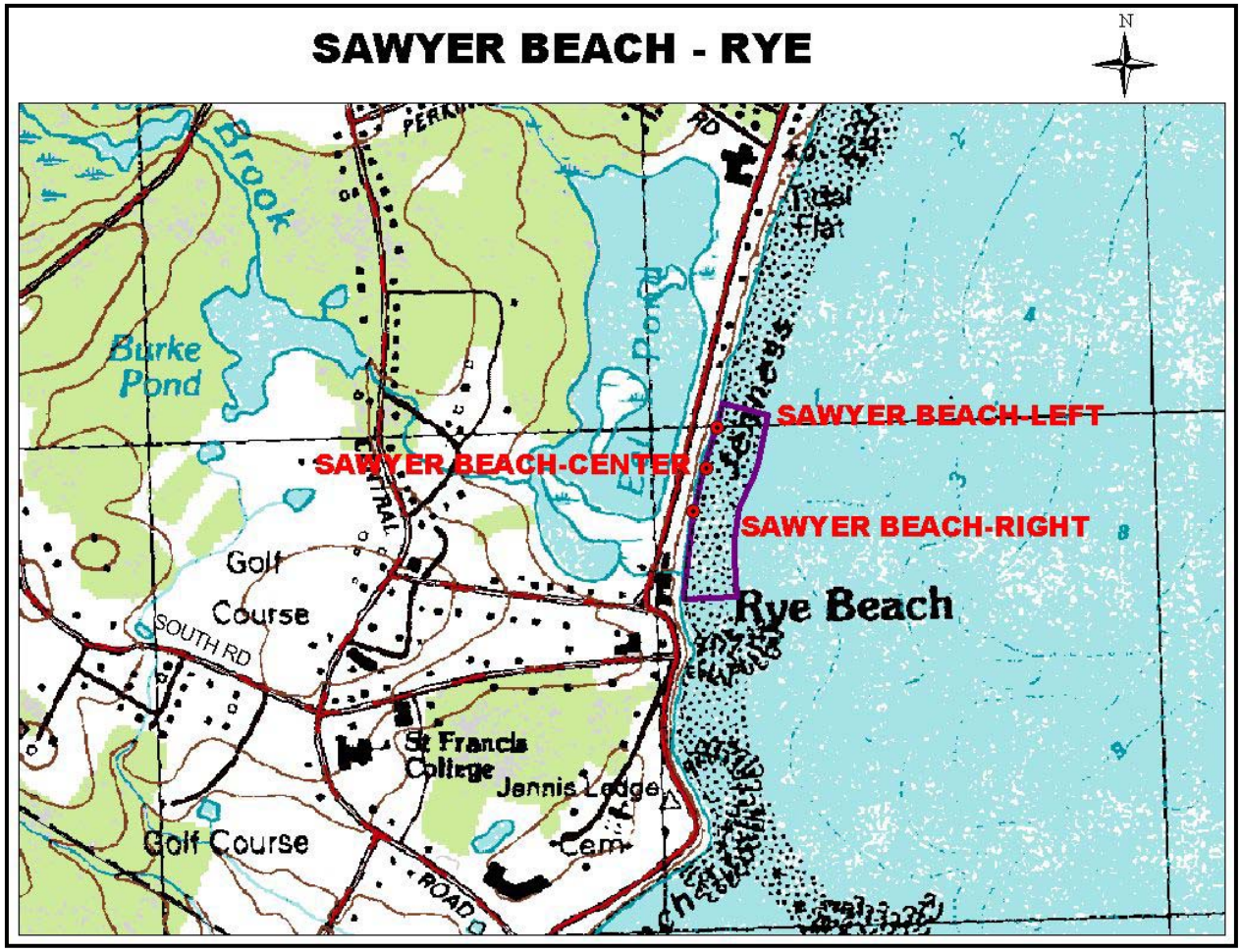

Figure 1. Map of Sawyer Beach

Tier Status and Sampling Frequency

The Beach Program developed a risk-based beach evaluation process and tiered monitoring approach and implemented this approach during the 2003 beach season. Beach evaluations are conducted annually to determine potential health threats to the public. Evaluations are based on several criteria in three main categories: beach history, microbial pathogen sources, and beach use. Based on these criteria, beaches are assigned either a Tier I or Tier II status. Tier I are high priority beaches that have an increased potential to affect public health while Tier II are low priority beaches that have less potential to affect public health. Beach sample frequency is based on the Tier statuses; Tier I beaches are sampled weekly and Tier II beaches are sampled every other week.

Sawyer Beach was categorized as a Tier I beach based on the Beach Program's Risk-Based Evaluation ranking system. This ranking indicates that the beach is frequently used by the public and there are potential pollution sources present that may negatively affect public health. Ranking of the beach has changed since 2002, when the ranking system was implemented. The

tier status changed due to the identification of multiple potential pollution sources in the vicinity of the beach.

Water Quality

Beaches are monitored to ensure compliance with State Water Quality Standards. Marine waters are analyzed for the presence of the fecal bacteria Enterococci. Enterococci are known as indicator organisms, meaning their presence may indicate the presence of pathogenic bacteria. The state standard for Enterococci at public beaches is 104 counts/100 mL in one sample, or a geometric mean of 35 counts/100 mL in three samples collected over sixty days. Standard exceedances require the issuance and posting of a beach advisory. Beach advisories remain in effect until subsequent beach sampling indicates safe water quality conditions.

The number of samples collected at each beach is determined by the beach length. Beaches less than 100 feet in length are sampled at left and right locations 1/3 of the distance from either end of the beach. Beaches greater than 100 feet in length are bracketed into thirds and sampled at left, center and right locations. Routine sample collection may be enhanced by sampling known or suspected pollution sources to the beach area. Also, storm event sampling may be conducted at beaches where wet-weather events are expected to affect beach water quality.

The 2004 sampling season began June 1st. June was cooler and drier than normal, July was cooler and wetter than normal, while August was warmer and wetter than normal. The sampling season encompassed 108 days, of which precipitation was recorded on 42 days (based on Seabrook WWTF recorded precipitation). Twenty beach days (normal beach hours are considered 9:00 a.m. to 5:00 p.m.) were directly affected by precipitation.

Sawyer Beach was sampled once per week from June 1st through Labor Day. Three samples were collected at left, center and right stations (Figure 1). There were a total of 15 routine inspections performed and 45 samples collected in 2004. One advisory inspection was performed after bacteria levels exceeded state standards. The Eel Pond Outlet was monitored on a routine basis (Table 2).

Table 1 includes the Enterococci data from each sampling event in 2004. Overall, the Enterococci levels were moderate this season and were slightly elevated compared to the 2003 season. A beach bacteria advisory was issued on August 4, 2004 after samples collected on August 2, 2004 exceeded the state standard. Subsequent samples indicated Enterococci levels had returned to normal allowing the advisory to be removed. There is no direct evidence as to what caused the elevated Enterococci levels. Beach inspection data noted 60 gulls on the north end of the beach and indicated it was high tide at the time of sampling. There was most likely a large amount of feces from the gulls on the beach. The tidal waters washed over the feces causing the fecal material and associated bacteria to become water-borne. The ocean currents may have transported the bacteria from the left station to the center and right stations. A similar situation most likely occurred on August 8, 2004 when Enterococci levels at the left station were elevated. Inspection data noted 100 gulls on the left side of the beach and the tide was receding. The flow from Eel Pond also washes over the fecal material on the beach and can transport bacteria to the beach water.

Table 1. Sawyer Beach Enterococci Data 2004

Sample Date	Station Name	Results (counts per 100 mL)
05/27/2004	Sawyer Beach – Left	<10
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
06/02/2004	Sawyer Beach – Left	10
	Sawyer Beach – Center	50
	Sawyer Beach – Right	20
06/08/2004	Sawyer Beach – Left	10
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
06/16/2004	Sawyer Beach – Left	<10
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
06/22/2004	Sawyer Beach – Left	70
	Sawyer Beach – Center	10
	Sawyer Beach – Right	30
06/29/2004	Sawyer Beach – Left	20
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
07/06/2004	Sawyer Beach – Left	<10
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
07/13/2004	Sawyer Beach – Left	<10
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<5
07/20/2004	Sawyer Beach – Left	20
	Sawyer Beach – Center	50
	Sawyer Beach – Right	<10
07/27/2004	Sawyer Beach – Left	20
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
08/02/2004	Sawyer Beach – Left	60
	Sawyer Beach – Center	160
	Sawyer Beach – Right	140
08/04/2004	Sawyer Beach – Left	20
	Sawyer Beach – Center	10
	Sawyer Beach – Right	<10
08/10/2004	Sawyer Beach – Left	130
	Sawyer Beach – Center	<10
	Sawyer Beach – Right	<10
08/16/2004	Sawyer Beach – Left	20
	Sawyer Beach – Center	10
	Sawyer Beach – Right	<10
08/23/2004	Sawyer Beach – Left	<10
	Sawyer Beach – Center	<5
	Sawyer Beach – Right	<10
08/31/2004	Sawyer Beach – Left	<10
	Sawyer Beach – Center	30
	Sawyer Beach – Right	<10

Table 2 includes Enterococci data for Eel Pond. This was the first season Eel Pond was routinely monitored to assess its impact on water quality at Sawyer Beach. Enterococci levels were elevated on several occasions this season. Eel Pond is home to ducks, geese, and a swan family that has resided there for at least two years. The waterfowl tend to congregate at a roadside clearing adjacent to the Eel Pond outlet. The feces from these waterfowl contain bacteria which can contaminate the surrounding waters and cause elevated Enterococci levels.

Table 2. Eel Pond Outlet Enterococci Data 2004

Sample Date	Results (counts per 100 mL)
05/27/2004	10
06/08/2004	80
06/16/2004	230
06/22/2004	20
06/29/2004	280
07/06/2004	250
07/13/2004	80
07/20/2004	20
07/27/2004	100
08/02/2004	<10
08/04/2004	20
08/10/2004	40
08/16/2004	50
08/23/2004	40

Figure 2 depicts the Enterococci data in relation to the state standard for coastal beaches.

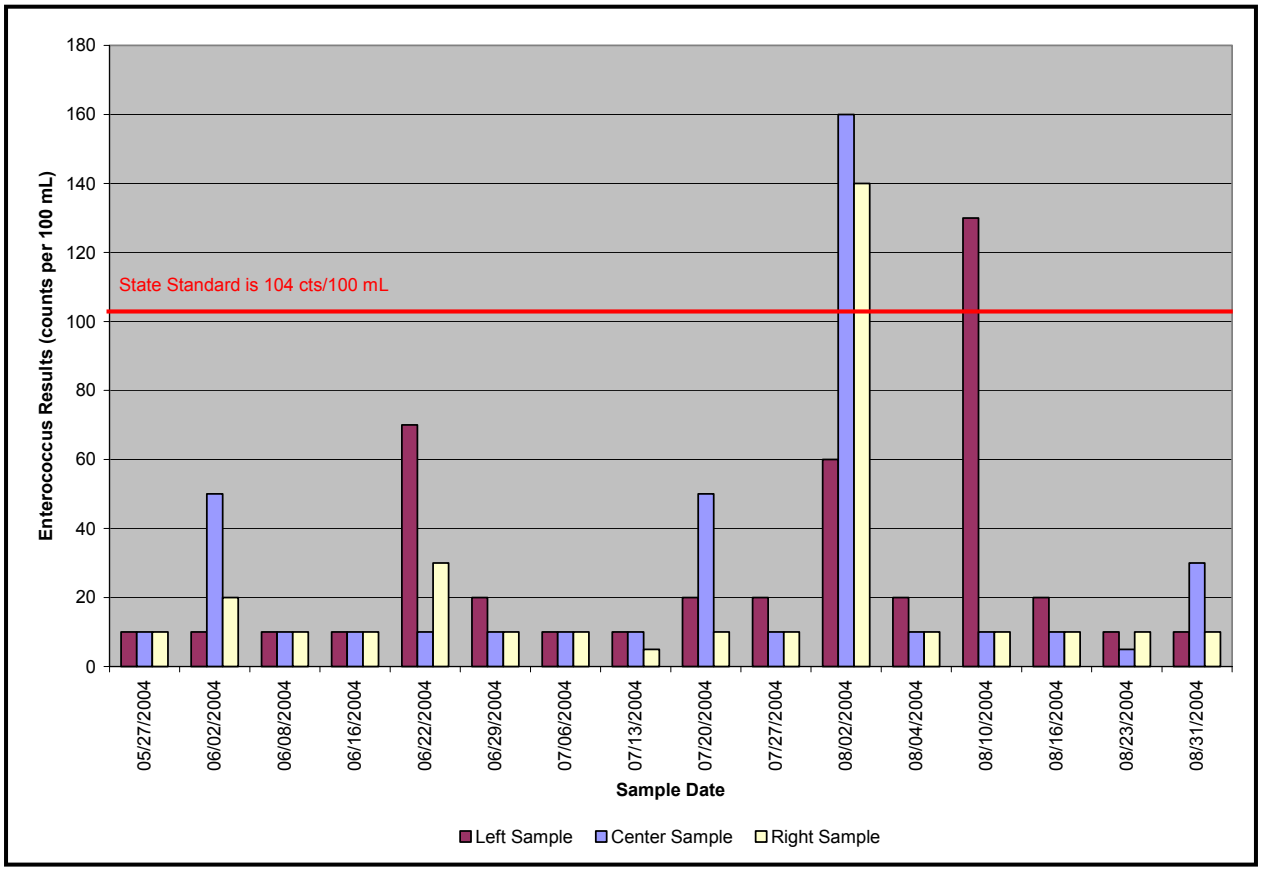

Figure 2. Sawyer Beach Enterococci Data 2004

Figure 3 depicts the Eel Pond Outlet Enterococci data.

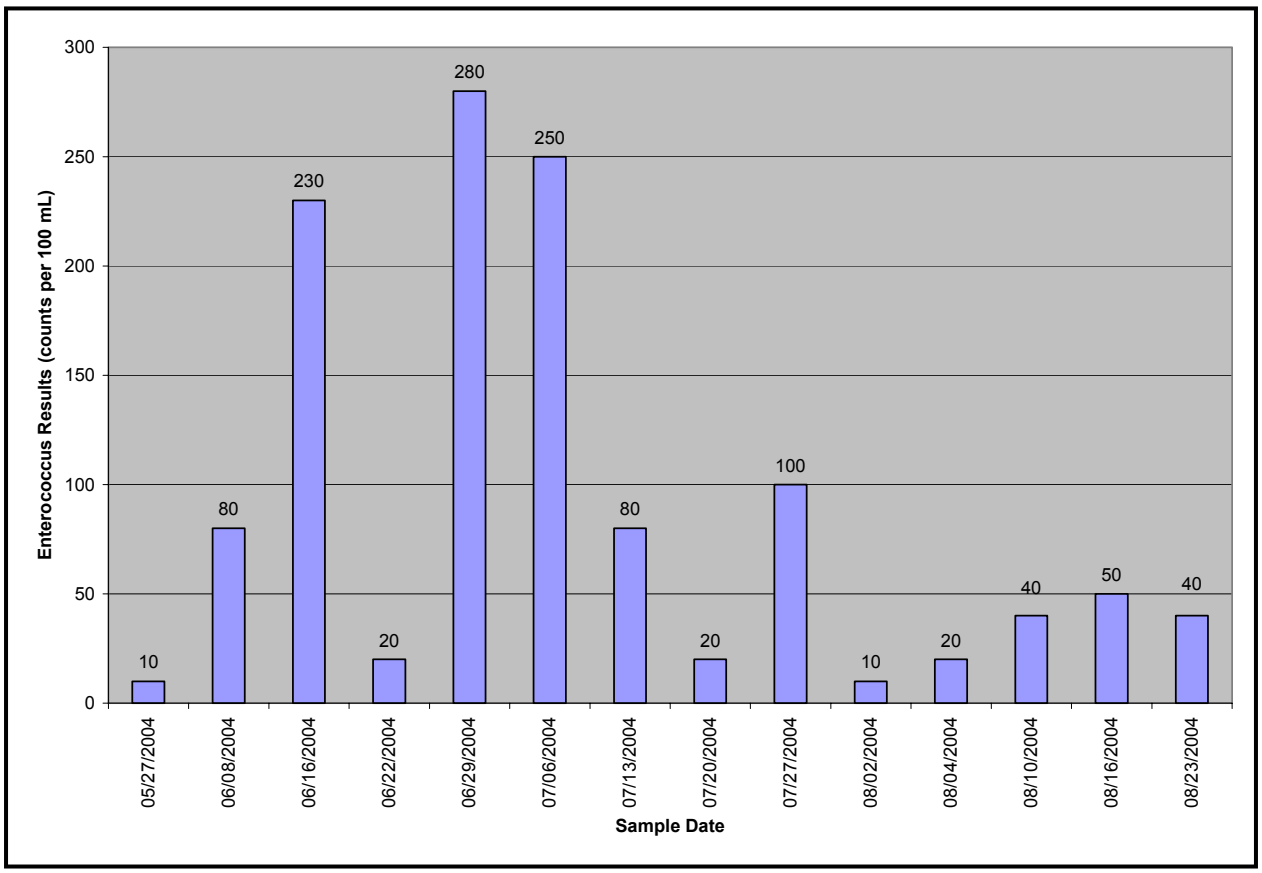

Figure 3. Eel Pond Outlet Enterococci Data 2004

The Beach Program staff analyzed whether a relationship exists between elevated Enterococci levels and precipitation at Sawyer Beach. Analyses of the data indicate no direct correlation. DES will continue to monitor precipitation data and Enterococci levels. Precipitation often causes elevated bacteria levels due to runoff in the watershed.

Areas of Concern

Seagulls have been observed congregating along the Eel Pond Discharge at the left station of Sawyer Beach. Research indicates that large numbers of birds create significant bacteria concentrations that result in beach advisories. During every beach inspection performed this season, between 40 and 200 waterfowl were seen near the left station of the beach along the Eel Pond discharge. There were numerous occasions when inspectors noted the beach was covered in feces from these waterfowl. Waterfowl are able to defecate up to 28 times per day. Their fecal material contains millions of bacteria that are potentially harmful to public health.

DES received a complaint during the summer of 2004 that a septic pump trunk was observed at the Eel Pond Outlet. The complainant was informed that it was illegal to discharge waste or rinse hoses in Eel Pond. The complainant was informed to call DES the next time he observed the septic truck at the site and provide additional information about the septage hauler.

The Town has expressed concern regarding children playing in the Eel Pond discharge. As mentioned above, bacteria levels were elevated on numerous occasions, posing a potential public health risk. Children are more susceptible to contract a water-borne illness and should not be allowed to recreate in the discharge.

Thoughts for the Future

- The Town of Rye, local businesses, or school group should consider joining NHDES' Adopt-a-Beach Program. The program would consist of beach clean-ups and water quality monitoring. DES would conduct training sessions and participate in education and outreach activities for the community. If you are interested, please contact Sara Sumner at 603-271-8803 or ssumner@des.state.nh.us.

- The Town should consider implementing waterfowl management strategies at Eel Pond and Sawyer Beach.

- The Town should consider restricting public access to the Eel Pond discharge. The area immediately in front of the drainage system should be roped off to discourage children from playing in the water. Also, signs may be posted to indicate the area may be unsafe for water contact due to potentially elevated levels of bacteria. Lifeguards should also patrol the area and discourage such activities.